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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
JIANG, SHAOJIA A	
ART UNIT	**PAPER NUMBER**
1617	

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/981,682	GRAHAM ET AL.	
	Examiner	Art Unit	
	Shaojia A. Jiang	1617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2005 and 21 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-7,9,11 and 13-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-7,9,11 and 13-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 17, 2005 has been entered.

This Office Action is in response to Applicant's request for continued examination (RCE) filed August 17, 2005, and amendment and response to the Final Office Action (mailed April 19, 2005), filed June 21, 2005 wherein claims 2 and 8 are canceled; 1, 3-7, 9, 11 and 13-20 have been amended since claim 1 has been amended. Claims 10, 12, and 21-50 are cancelled previously.

Currently, claims 1, 3-7, 9, 11 and 13-20 are pending in this application and under examination on the merits.

Applicant's declaration of Barney Graham, Tara Gower, and Manoj Pastey (inventors) submitted June 21, 2005 under 37 CFR 1.131, is acknowledged and will be further discussed below.

Applicant's amendment filed June 21, 2005 wherein claim 2 is canceled, with respect to the rejection of Claims 2-6 made under 35 U.S.C. 112, first paragraph, for lack of scope of enablement for a patient who does not have an existing viral infection,

of record in the Final Office Action April 19, 2005, has been fully considered and found persuasive to remove the rejection since claim 2 is canceled. Therefore, the said rejection is withdrawn.

The following is new rejection(s) necessitated by Applicant's amendment filed on June 21, 2005, wherein the limitations in the amended claims have been changed. Moreover, Applicant's declaration of Barney Graham, Tara Gower, and Manoj Pastey (inventors) submitted June 21, 2005 under 37 CFR 1.131 has been considered and found persuasive to remove the reference, Graham et al. (WO 99/62932, of record). Therefore, all prior art rejections under 35 U.S.C. 102(b) and 103(a) of record in the previous Office Action April 19, 2005 are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-7, 9, 11 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldini et al. (*Efficacy and tolerability of pravastatin for the treatment of HIV-1 protease inhibitors-associated hyperlipidemias: a pilot*, of record) in view of Streckert et al. ("Epitopes at the proteolytic cleavage sites of HIV-1-gp120 and RSV-F

protein share a sequence homology: comparative studies with virus-induced and antipeptide antibodies", PTO-892).

Baldini et al. discloses administering the particular inhibitor of HMG-CoA reductase, pravastatin, to HIV-infected human patients who also administering protease inhibitors included ritonavir plus saquinavir, ritonavir, indinavir, saquinavir, ritonavir plus nelfinavir, and nelfinavir. See abstract.

Note that Baldini et al. discloses that the effective amount of pravastatin to be administered is 20 mg/day (see abstract), which are within the effective amounts 10-40 mg/day for pravastatin, indicated in Applicant's specification (see page 17 line 12 of the specification).

Baldini et al. do not expressly disclose that the particular virus to be treated by using an HMG-CoA reductase inhibitor is respiratory syncytial virus (RSV) in a human, a non-human mammal, or a livestock animal.

Streckert et al. teaches that "the proteolytic cleavage sites of the human immunodeficiency virus type 1 (HIV-1) envelope glycoprotein precursor gp160 and the fusion protein of respiratory syncytial virus (RSV) show a sequence homology."(emphasis added). See abstract.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a HMG-CoA reductase inhibitor in a method of inhibiting infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal.

One having ordinary skill in the art at the time the invention was made would have been motivated to employ a HMG-CoA reductase inhibitor in a method of inhibiting infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal, since a HMG-CoA reductase inhibitor such as pravastatin is known to be useful in a method for treating HIV infective or AIDS patients, according to Baldini et al. Moreover, HMG-CoA reductase inhibitors in combination with other antiviral agents such as protease inhibitors to be administered to HIV-infected human patients are known in the art according to Baldini et al.

Further, both RSV and HIV are known enveloped viruses and it is also known that "the proteolytic cleavage sites of the human immunodeficiency virus type 1 (HIV-1) envelope glycoprotein precursor gp160 and the fusion protein of respiratory syncytial virus (RSV) show a sequence homology, according to Streckert et al. Thus, one of ordinary skill in the art would have reasonably expected that pravastatin would also be able to inhibit RSV infective cycle and multiplication as it inhibits HIV infective cycle and multiplication, since both RSV and HIV are known enveloped viruses and show a sequence homology. Thus, they share a common mechanism-fusion of the viral envelop.

Therefore, one of ordinary skill in the art would have reasonably expected that an HMG-CoA reductase inhibitor would have a beneficial therapeutic effect in inhibiting infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal.

Thus the claimed invention as a whole is clearly prima facie obvious over the combined teachings of the prior art.

Claims 1, 3-7, 9, 11 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murillas et al. (*Atorvastatin: therapeutic use. Hyperlipidaemia In patients with HIV-1 infection receiving protease inhibitors*, of record) in view of Streckert et al. ("Epitopes at the proteolytic cleavage sites of HIV-1-gp120 and RSV-F protein share a sequence homology: comparative studies with virus-induced and antipeptide antibodies", PTO-892).

Murillas et al. discloses administering the particular inhibitor of HMG-CoA reductase, atorvastatin, to HIV-infected human patients who also receiving protease inhibitors. See abstract.

Murillas et al. do not expressly disclose that the particular virus to be treated by using an HMG-CoA reductase inhibitor is respiratory syncytial virus (RSV) in a human, a non-human mammal, or a livestock animal.

Streckert et al. teaches that "the proteolytic cleavage sites of the human immunodeficiency virus type 1 (HIV-1) envelope glycoprotein precursor gp160 and the fusion protein of respiratory syncytial virus (RSV) show a sequence homology."(emphasis added). See abstract.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ an HMG-CoA reductase inhibitor in a method of

inhibiting infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal.

One having ordinary skill in the art at the time the invention was made would have been motivated to employ a HMG-CoA reductase inhibitor in a method of inhibiting infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal, since a HMG-CoA reductase inhibitor such as atorvastatin is known to be useful in a method for treating HIV infective or AIDS patients, according to Murillas et al. Moreover, HMG-CoA reductase inhibitors in combination with other antiviral agents such as protease inhibitors to be administered to HIV-infected human patients are known in the art according to Murillas et al.

Further, both RSV and HIV are known enveloped viruses and it is also known that "the proteolytic cleavage sites of the human immunodeficiency virus type 1 (HIV-1) envelope glycoprotein precursor gp160 and the fusion protein of respiratory syncytial virus (RSV) show a sequence homology, according to Streckert et al. Thus, one of ordinary skill in the art would have reasonably expected that atorvastatin would also be able to inhibit RSV infective cycle and multiplication as it inhibits HIV infective cycle and multiplication, since both RSV and HIV are known enveloped viruses and show a sequence homology. Thus, they share a common mechanism-fusion of the viral envelop.

Therefore, one of ordinary skill in the art would have reasonably expected that an HMG-CoA reductase inhibitor would have a beneficial therapeutic effect in inhibiting

infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal.

Thus the claimed invention as a whole is clearly prima facie obvious over the combined teachings of the prior art.

Claims 1, 3-7, 9, 11 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maziere et al. (C24, PTO-1229 submitted June 11, 2002) in view of Streckert et al. ("Epitopes at the proteolytic cleavage sites of HIV-1-gp120 and RSV-F protein share a sequence homology: comparative studies with virus-induced and antipeptide antibodies", PTO-892) and Mills (of record).

Maziere et al. teaches that HMG-CoA reductase inhibitors, such as lovastatin, are useful in a method of inhibiting HIV infective cycle in AIDS patients since lovastatin inhibits HIV-1 expression in H9 human T lymphocytes or viral multiplication. See in Maziere et al., the title, "Summary", and page 66 "Conclusion". Maziere et al. also teaches that the particular nucleoside analog, AZT, is known to be useful in treating viral infection by inhibiting viral replication in humans. See "Introduction" page 63 the left column.

Maziere et al. do not expressly disclose the employment of HMG-CoA reductase inhibitors in a method of inhibiting infection of a cell by a virus which is respiratory syncytial virus (RSV) in a human, a non-human mammal, or a livestock animal. The above cited prior art does also not expressly disclose the employment of HMG-CoA

reductase inhibitor in combination with ribavarin in a method inhibiting infection of a cell by a virus in a subject.

Streckert et al. teaches that "the proteolytic cleavage sites of the human immunodeficiency virus type 1 (HIV-1) envelope glycoprotein precursor gp160 and the fusion protein of respiratory syncytial virus (RSV) show a sequence homology."(emphasis added). See abstract.

Mills teaches that ribavarin is a known antiviral agent or drug for RSV infections. The combination of ribavarin and other antiviral agents are also known in the art. See page 39-41.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a HMG-CoA reductase inhibitor in a method of inhibiting infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal, and to employ a HMG-CoA reductase inhibitor in combination with ribavarin in a method of inhibiting infection of a cell by a virus.

One having ordinary skill in the art at the time the invention was made would have been motivated to employ a HMG-CoA reductase inhibitor in a method of inhibiting infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal, since a HMG-CoA reductase inhibitor such as lovastatin is known to be useful in a method for inhibiting infection of a cell by a virus, i.e., inhibiting HIV infective cycle in AIDS patients, by inhibiting HIV-1 expression in H9 human T lymphocytes or viral multiplication according to Maziere et al. Moreover, HMG-CoA reductase inhibitors in combination with other antiviral agents such as protease

inhibitors to be administered to HIV-infected human patients are known in the art (as taught by Murillas et al. or Baldini et al.).

Further, both RSV and HIV are known enveloped viruses and it is also known that "the proteolytic cleavage sites of the human immunodeficiency virus type 1 (HIV-1) envelope glycoprotein precursor gp160 and the fusion protein of respiratory syncytial virus (RSV) show a sequence homology, according to Streckert et al. Thus, one of ordinary skill in the art would have reasonably expected that pravastatin would also be able to inhibit RSV infective cycle and multiplication as it inhibits HIV infective cycle and multiplication, since both RSV and HIV are known enveloped viruses and show a sequence homology. Thus, they share a common mechanism-fusion of the viral envelop.

Therefore, one of ordinary skill in the art would have reasonably expected that an HMG-CoA reductase inhibitor would have a beneficial therapeutic effect in inhibiting infection of a cell by a virus such as RSV in a human, a non-human mammal, or a livestock animal.

Additionally, one having ordinary skill in the art at the time the invention was made would have been motivated to add ribavarin in a method of inhibiting infection of a cell by a virus such as RSV, since ribavarin is known to be useful in treating viral infection including RSV by inhibiting viral replication in humans, and combination therapy for treating viral infections is well known in the art.

Thus the claimed invention as a whole is clearly prima facie obvious over the combined teachings of the prior art.

Applicant's arguments filed on June 21, 2005 with respect to the prior art rejections in the Office Action dated April 19, 2005, now withdrawn, have been considered but are moot in view of the new ground(s) of rejections set forth above.

In view of the rejections to the pending claims set forth above, no claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Jiang, whose telephone number is (571)272-0627. The examiner can normally be reached on Monday-Friday from 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreenivasan Padmanabhan, Ph.D., can be reached on (571)272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Anna Jiang, Ph.D.
Primary Examiner
Art Unit 1617
October 19, 2005